

REMARKS

In the Action, claims 1-16 are rejected. In response, claims 1-5, 8 and 9 are amended, and claim 7 is cancelled. Thus, the pending claims in this application are claims 1-6, 8, 9 and 11-16, with claims 1 and 9 being independent. In view of these amendments and the following comments, reconsideration and allowance are requested.

The specification is amended to correct the spelling of chitosan as suggested in the Action. Minor clerical errors were also corrected. Claims 1-6 are amended to overcome the claim objections noted on pages 2 and 3 of the Action.

Claim 7 is cancelled and claim 8 is amended as suggested in the Action to recite that the resin composition does not contain chitin, chitosan and starch to overcome the rejections under 35 U.S.C. § 112, first paragraph.

Rejection Under 35 U.S.C. § 102

Claims 9 and 13-16 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,110,578 to Kakizawa et al. as evidenced by U.S. Patent No. 5,346,944 to Hayashida et al. Kakizawa et al. is cited for disclosing a moldable biodegradable material comprising a hydroxycarboxylic acid based polyester, a lubricant such as glycerin monostearate, and an antistatic agent such as an alkyl sulfonate. Hayashida et al. is cited for disclosing that glycerin monostearate is known to act as an anti-static agent.

As amended, claim 9 recites a biodegradable polyester comprising a polylactic acid resin and an antistatic agent where the antistatic agent comprises a glycerin fatty acid ester having a

fatty acid group with 8-12 carbon atoms and an alkyl sulfonate. Kakizawa et al. does not disclose or suggest an antistatic agent comprising a glycerin fatty acid ester having 8-12 carbon atoms in the fatty acid group. Kakizawa et al. only discloses a C₁₈ fatty acid ester, namely glycerin monostearate and diethylene glycol monostearate. Accordingly, claim 9 is not anticipated by Kakizawa et al. Claims 13-16 depend from claim 9 and thus are also not anticipated.

In view of these amendments, claims 9 and 13-16 are not anticipated over the art of record.

Rejections Under 35 U.S.C. § 103

Claims 1-10 and 12-16 are rejected under 35 U.S.C. § 103(a) as being obvious over Kakizawa et al. in view of U.S. Patent No. 5,346,944 to Hayashida et al. and U.S. Patent No. 6,582,813 to Okumura et al. Kakizawa et al. is cited for disclosing a multiple biodegradable expanded material made from a hydroxycarboxylic acid based polyester such as lactic acid and 0.01 to 5 parts by weight of an antistatic agent such as an alkyl sulfonate. As recognized in the Action, Kakizawa et al. does not disclose an antistatic agent comprising two different antistatic components, and in particular does not disclose the combination of a glycerin fatty acid ester and an alkyl sulfonate. The rejection is based on the position in the Action that it appears that Kakizawa et al. is open to various combinations of known antistatic agents.

Hayashida et al. is cited for disclosing a polyolefin resin with the use of a glycerin fatty acid monoester with an alkyldiethanolamide to provide antistatic properties. Okumura et al. is

cited for disclosing a biaxially oriented polyester film containing a known antistatic agent. The Action suggests that it would be obvious to one of ordinary skill in the art to replace the alkanol amide of Hayashida et al. with an alkyl sulfonate.

Kakizawa et al. is relevant to the extent that a biodegradable polyester is disclosed that can contain a known antistatic component. The Action recognizes that Kakizawa et al. does not disclose the combination of two antistatic components and particularly fails to disclose or suggest a glycerin fatty acid ester and an alkyl sulfonate in the claimed amounts. However, the Action appears to suggest that Kakizawa et al. is “open to any suitable antistatic agent”. Obviousness under 35 U.S.C. § 103 is not established by a reference that fails to exclude a claimed component. The Action fails to establish prima facie obviousness. The prior art must provide the necessary motivation and incentive to one of ordinary skill in the art to produce the claimed composition. Kakizawa et al. clearly fails to provide the necessary incentive to use two different antistatic agents in the claimed amounts.

Hayashida et al. is clearly directed to a specific combination of two components to provide the antistatic properties to a polyolefin film only. The properties of a polyolefin film are not the same as the claimed biodegradable polyester film obtained from lactic acid. Furthermore, Hayashida et al. specifically discloses that the conventional antistatic agents are not sufficient for use in polyolefin resin compositions. Hayashida et al. is concerned only with polyolefin films and not polylactic acid or other biodegradable polyester films. Thus, Hayashida et al. provides no motivation or incentive to use the antistatic agents of Hayashida et al. in a biodegradable polyester obtained from lactic acid.

Okumura et al. is cited for allegedly disclosing the equivalents of various antistatic agents. However, the passage referred to in the Action only identifies a number of known antistatic agents. There is no suggestion in Okumura et al. that the identified antistatic agents are equivalent to each other or that the identified antistatic agents can be substituted with one another with the expectation of the same results.

The Action has not established equivalence of the different antistatic agents or that each of the antistatic agents are equally effective, and particularly the equivalence of a alkyldiethanolamide and alkyl sulfonate. Hayashida et al. clearly suggests that all antistatic agents are not equivalent and are not effective for all purposes. Accordingly, the Action fails to establish the equivalence of the alkyl ethanol amine of Hayashida et al. with a random selection of any of the identified antistatic agents of Okumura et al. Furthermore, Okumura et al. provides no suggestion of using a combination of any two specific antistatic agents to provide a synergistic effect that is not obtained by the antistatic agents alone.

As noted in the previous response, Applicants have discovered that the combination of a glycerin fatty acid monoester and an alkyl sulfonate provide a synergistic effect in improving the antistatic properties of the biodegradable polyester resin. The art of record provides no suggestion of combining antistatic agents for use in a biodegradable polyester resin. The position taken in the Action that all antistatic agents are equivalent and replaceable with one another is contrary to the discovery of the present invention and to the teachings of the cited patents. Furthermore, the equivalence of all antistatic agents as suggested in the Action provides no guidance or motivation to one of ordinary skill in the art to combine an alkyl sulfonate and a

glycerin fatty acid monoester in the claimed amounts. The rejection is based on the random picking and choosing of selected portions of the cited patents to attain the claimed invention where the cited patents provide no motivation or guidance to combine the antistatic agents as in the claimed invention. The random selection of antistatic agents does not support a finding of obviousness.

The data in Table 1 on page 15 of the specification demonstrates the improved antistatic properties and transparency of the resulting biodegradable polyester resin composition when the antistatic agent comprises a combination of the claimed glycerin fatty acid ester and an alkyl sulfonate. In particular, Embodiment 1 shows that equal parts by weight of glycerol monolaurate (C₁₂) and an alkyl sulfonate provide a half life of the electrostatic charge of 14 seconds. Embodiment 1 discloses 1 part by weight of each of the two antistatic agents for a total of two parts by weight based on the weight of the polyester resin composition. In contrast, Comparative Example 2 shows that the same amount, namely, two parts by weight of an antistatic agent where the antistatic agent is only glycerol monolaurate has a half life of the electrostatic charge of 108 seconds. Comparative Example 9 shows that two parts by weight of the alkyl sulfonate has the only antistatic agent has a half life of the electrostatic charge of 105 seconds. Thus, the data clearly demonstrates that the combination of an alkyl sulfonate and a glycerin fatty acid monoester within the claimed range has greatly improved and unexpected antistatic properties compared to each of the separate antistatic agents when used alone. If the results were expected as suggested in the Action, one skilled in the art would expect a half life of between 105 of an alkyl sulfonate and 109 of glycerol monolaurate and not 14 as in Embodiment 1.

The Action suggests that the data does not establish a synergistic effect of the combination of the two claimed antistatic agents. Contrary to this assertion, the data clearly demonstrates that the combination of the claimed antistatic agents vastly improve the antistatic properties. The Action provides no basis for the position that the combination of antistatic agents does not provide a synergistic effect.

The Action suggests that Applicants are required to show that a synergistic effect does not occur between the glycerin fatty acid esters and the alkyl-diethanolamide of Hayashida et al. Applicants are not required to disprove that the two antistatic agents of Hayashida et al., which are not being claimed in the present invention, do not have a synergistic effect. Furthermore, the Action has failed to provide any suggestion or basis for the position that the glycerin fatty acid ester and alkyl-ethanolamide of Hayashida et al. have a synergistic effect. Even if the combination of the two specifically disclosed antistatic agents of Hayashida et al. have a synergistic effect with respect to polyolefins, this does not diminish the synergistic effect of the claimed combination. Applicants are not required to disprove the antistatic effect of Hayashida et al. as suggested in the Action. The Patent Office has the burden to establish that the claimed combination is obvious to one of ordinary skill in the art. The Action improperly shifts the burden to Applicants. Since the cited art as a whole fails to provide any motivation or incentive to one of ordinary skill in the art to provide the claimed combination, independent claims 1 and 9 are not obvious over Kakizawa et al., Hayashida et al. and Okumura et al.

Claims 2-6 which depend from claim 1 are also allowable as depending from an allowable base claim for reciting additional features of the invention that are not disclosed or

suggested in the art of record. For example, the combination of the cited art does not disclose the composition or the ratio of the glycerin fatty acid monoester to the alkyl sulfonate is in the range of 50/50 to 90/10 by weight as in claim 2, the polyester resin being a polylactic acid resin as in claim 3, the ratio of the glycerin fatty acid monoester to the alkyl sulfonate in the range of 65/35 to 90/10 as in claim 4 or the range of 75/25 to 90/10 by weight as in claim 5, in combination with the features of claim 1. The cited art further fails to disclose films, sheets or molded articles from the composition of claim 1 as recited in claim 6. The art of record further fails to disclose a resin as in claim 1 that does not include chitin, chitosan or starch as in claim 8. Accordingly, claims 1-6 and 8 are allowable over the art of record.

Claims 10-16 are also allowable as depending from allowable claim 9. The art of record does not disclose the polyester resin composition where the antistatic agent includes a glycerin fatty acid ester having a fatty acid group with 8 carbons as in claim 11, the glycerin fatty acid ester being glycerol monolaurate as in claim 12, the composition including 0.5 to 2 parts by weight of the antistatic agent as in claim 13, the ratio of the glycerin fatty acid monoester to alkyl sulfonate as in claims 14, 15 and 16, in combination with the composition of claim 9. Accordingly, the claims are allowable over the art of record.

In view of these amendments and the above comments, claims 1-6, 8, 9 and 11-16 are allowable over the art of record. Reconsideration and allowance are requested.

Respectfully submitted,



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